

Factors that Influence the Decision to Pursue Studies or Work after Graduation: A Study among Final Year Undergraduates in Universiti Sains Malaysia

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Abstract

Postgraduate education is becoming more and more important in developed countries such as US and Europe, as well as in developing countries. The government of Malaysia is also trying to encourage students to pursue postgraduate studies by implementing policies such as MyBrain 15. The purpose of this research is to determine the factors that influence the decision to pursue postgraduate studies among final year undergraduates in Malaysia. A sample of 434 respondents from Universiti Sains Malaysia is used in this study and a logit regression is estimated to examine the factors that influence the choice to pursue postgraduate studies versus the choice to work. The findings of this study reveal that variables such as gender, academic stream, race, family income, CGPA and expected difference in future income are significantly related to the decision to pursue postgraduate studies. Policy recommendations based on the findings of this study include encouragement for males to pursue postgraduate studies, giving sufficient and sustainable financial aid, ensuring a higher premium for postgraduates, improving the university ranking and reputation as well as offering programmes with affordable fees and creating a better environment for students to study.

Keywords: *postgraduate studies, work, university, Malaysia*

1. Introduction

The number of employees with postgraduate qualifications in the labor market in US and Europe are showing a significant increasing trend. Part of the reason why there is a high demand for postgraduates nowadays is that postgraduates have different skill sets such as self-motivation, self-management and resilience which enable them to do different job tasks. The growing presence of postgraduates due to the increasing relative demand in favor of postgraduates has become a crucial factor in explaining rising wage inequality. Consequently, some graduates have been feeling the need to acquire postgraduate qualifications (Lindley and Machin, 2013).

There is also evidence of a clear upward trend in unemployment and underemployment among recent college graduates in US over the past two decades (Abel, Deitz, Su, 2014). Due to the unemployment and underemployment problem in US, the question that arises is whether a college degree is sufficient to meet the needs

of the industry or whether a higher degree such as Masters or PhD is preferred by employers.

According to an educational writer in New York Times, the Master's degree in the US has become the fastest growing degree in the country (Pappano, 2011). As the role of STEM (science, technology, engineering and mathematics) become more significant in US and Europe, the demand for STEM skills at Master's level or above is also growing rapidly (Nasser, 2014).

A Labour Force Survey found that the earnings are higher for higher degrees specifically for female postgraduates who can earn up to 34% more than their undergraduate counterparts (Davies and Caitlin, 2004). Employers are willing to place this value of premium on postgraduates because they supply high levels of scientific knowledge and technical skills and therefore they are instrumental in developing and motivating other staff (Creasey, 2013).

Moreover, people who have higher qualifications usually have better employment prospects compared to those who possess bachelor's degree. This hypothesis was proven by the US Bureau of Labor Statistics with a published chart showing a median unemployment rate of 3.5% for master's degree holders, in contrast to 4.5% among individuals with a bachelor's degree (Playdon, 2013). Typical reasons for pursuing postgraduate studies include improvement in job prospects and employability, to develop more advanced skills that complement the development in information technology (especially STEM) and to gain expertise in a given field (Harland and Plangger, 2004).

The total number of students taking postgraduate studies which include PhD, Master and Postgraduate diploma reached 77,785 in the year 2011 and it increased to 84569 and 94952 in the year 2012 and 2013, respectively (Malaysia, Ministry of Higher Education, 2013). In addition, MyBrain 15 was established by the Malaysian government to develop the talent pool of high-level intellectuals and to produce human capital with a first class mind set in order to face development challenges in a knowledge- and innovation-based economy. This sponsorship programme was introduced in the National Higher Education Strategic Plan under the Tenth Malaysian Plan (Malaysia, Ministry of Finance and Higher Education, 2013).

Given the upward trend in the number of postgraduates and the role of postgraduates across the world, it is interesting to explore this issue from a micro perspective. This study attempts to look at the factors that influence the decision of undergraduates with respect to the choice of pursuing postgraduate studies or seeking employment after graduation. This study focuses on the choice among final year undergraduates in Malaysia's APEX public University i.e. Universiti Sains Malaysia (USM).

2. Insights from the Literature

The theoretical insight to understanding undergraduate's decision to pursue further studies or work after their graduation can be drawn from the investment in human capital model (McConnell, 2013). By using the investment in human capital model, McConnell explained that if one enrolled in postgraduate studies, this will entail both

direct and indirect cost. The direct cost comprises school fees, books, tuition and so on while the indirect cost comprises the forgone earnings. The model also states that after pursuing postgraduate studies, the particular individual will eventually earn an income which is greater than those who did not pursue postgraduate studies. In short, the individual would choose to pursue postgraduate studies if the returns of postgraduate education exceed the cost.

Empirically, past studies have shown that the decision to pursue further studies or work among students can be affected by seven factors such as parent's educational level, family income level, expected difference in future earnings, CGPA, gender, race and academic stream.

According to Aughinbaugh (1997), an individual's family background with regard to education is one of the main factors that influence the decision about postgraduate studies. Youths from more advantaged family backgrounds are more likely to go to college. The probability of attending college among youths increases with the educational attainment of both the respondent's mother and father. Many recent studies in industrialised countries showed that young adults with lower educated parents in general will have lower educational aspirations or expectations and choose lower tracks (Shavit et al., 2007). This is because parents with better education level are considered more likely to provide both incentives and opportunities for their children to pursue further studies (Hayden & Carpenter, 1990).

According to Keys et al. (2002), a recent survey of school teachers and further education college lecturers who were given the task of processing applications to higher education revealed that the concern of financial constraints is the main factor that dissuades or prevents students from pursuing their university education. Other studies also show that the lack of financial resources or the willingness of lower educated parents to support in their children's education also have a negative influence on the pursuit of higher education (Becker and Hecken, 2009). Additionally, Saitia and Prokopiado's (2008) study also shows that family monthly income appeared to be an influential factor in the demand for higher education in Greece. Thus, those students from families with a greater monthly income have a greater chance to pursue higher education.

Moreover, based on the U.S. Bureau of Labour Statistics, a typical master's degree holder earned \$1,300 per week in 2012, which is 22 percent higher than the earning potential of individuals with a bachelor's degree. Besides, parents and students see higher education as the means of securing a comfortable and well-paid occupation with regard to earning (Demetriades, 1989; Eliophotou-Menon, 1998).

Gender has an important effect on higher education. It is generally found that males have a lower likelihood of pursuing higher education than females. Women need a higher level of qualification than men do in order to compete in the labour market due to the discrimination towards women in the labour market (Albert, 1999). Besides that, it is also stated that the likelihood of attending college is strongly related to high school outcomes. Specifically, for every percentage point that one's academic score increases, the probability of going college also increases (Aughinbaugh, 1997).

In addition, according to the research of Gayle, Berridge and Davies (2000), it was stated that various ethnic groups have differential rates of participation in higher education. The choice of a major may also influence the decision of young people to pursue a graduate degree. Evidence shows that students in arts and science fields are more likely to pursue graduate education than are those in professional fields (Coyette and Mullen 2002).

Lastly, the former prime minister of Malaysia, Tun Dr Mahathir bin Mohamad's "Vision 2020" statement which envisions the transformation of the nation into a knowledge-based economy or K-economy has encouraged many adults to continue their education (Mazanah, 2001).

3. Model and Data

Model

The primary objective of this study is to determine factors that influence the decision to pursue postgraduate studies or work after first degree graduation. Logistic regression model (Logit) is used due to the fact that the dependent variable in this study is the study decision of USM undergraduates which is a dichotomous variable (pursue postgraduate studies or not). The Logit Model is used to estimate the outcome of a categorical dependent variable based on multiple predictor variables. There are only two possible outcomes for the dependent variable in this study, i.e. if the undergraduate would like to pursue their studies after their graduation in USM ($Y=1$) and 0 otherwise. In general, the logit model can be written as follows:

$$\log \frac{P}{1-P} = \alpha + \beta_i X_i + \varepsilon \quad (1)$$

where,

P denotes the probability to pursue postgraduate studies. P takes the value of 1 if the respondent is going to pursue postgraduate studies and the value 0 if respondent does not want to pursue further studies. β_i denotes the coefficient of the explanatory variables while X_i refers to the explanatory variables. ε is the stochastic disturbance term of the regression.

Data

The data set used in this study is obtained from a survey which was carried out between February and April 2015. The target respondents are final year undergraduates from Universiti Sains Malaysia. A total of 434 final year undergraduates participated in the survey. A self-administered questionnaire was distributed randomly to the final year undergraduates in USM.

Variables

The explanatory variables such include gender which takes value of 1 for male and 0 for female while academic stream takes value of 1 for art streams courses and 0 for science streams courses. The respondent's race takes the value of 1 if it is Malay and 0 otherwise. Parents' educational level is divided into two groups which is father's educational level and mother educational level which comprises primary education level, secondary education level and tertiary education level (reference variable). The variable family income level is divided into three categories which is low income family (<RM3000), medium income family (RM3000-RM5999) and high income family

(>RM6000) by taking high income family as the reference group. The expected difference in future income is also sub-divided into the three categories i.e. low expected income difference (RM100-RM499), medium expected income difference (RM500-RM999) and high expected income difference (>RM1000) where high expected income difference is the base group.

Finally, the variable CGPA is also reframed into categories of three such as CGPA 2.9 and below, CGPA between 3 and 3.49 as well as CGPA 3.5 and above by taking CGPA 3.5 and above as reference variable.

Characteristics of survey respondents

Table 1 lists the variables and the definitions of the variables as well as presents the summary statistics of the survey respondents. Out of the 434 respondents, only 22.4% (97 respondents) decide to pursue postgraduate studies. The sample of total 434 respondents comprises 38.3% Malays, 50% Chinese, 9.2% Indian and 2.5% other races. The sample consists of 41.7% males and 58.3% females. The gender composition in the sample represents the gender composition in local universities where the female-male ratio is about 60:40. The sample also comprises 72.6% arts stream students and 27.4% science stream students. The data shows that only 18.2% of males wish to pursue postgraduate studies. The data also shows that respondents only 14.5% of undergraduates from arts stream intend to pursue postgraduate studies. In contrast, over 60% of respondents with parents who acquired tertiary education level want to pursue postgraduate studies. Furthermore, 61.1% of respondents who perceive high expected difference in future income wish to pursue postgraduate studies. Lastly, 59.1% of respondents who acquired a CGPA of 3.5 and above plan to pursue postgraduate studies; this figure is much higher when compared to those who acquired a CGPA lower than 3.5.

4. Empirical analysis

Table 2 presents the estimates of logit regression (column 2) and the odd ratio of the explanatory variables (column 4). Hosmer-Lemeshow test ($\chi^2 = 7.669$) and expected prediction statistics (84.8%) which indicates that the model is found to correctly predict 84.8% of the outcomes in the sample via expected prediction value.

Overall, the results shows that most of the independent variables are significantly associated with the dependent variable, except for father's and mother's education background, low income family (family income below RM3000) and low expected difference in future income (RM100-RM499) that are found to be not significant in determining the likelihood of respondents to pursue postgraduate studies.

Table 1: Summary statistics of survey respondents (mean)

Variables	Description	Undergraduates who decide to pursue postgraduate studies (%) (n ₁ =97)	Undergraduates who decide not to pursue postgraduate studies (%) (n ₂ =337)	Total sample (%) (n=434)
<i>Binary variables (1=yes; 0=otherwise)</i>				
Male	The respondent is a male	18.2	81.8	41.7
Art	The respondent is from Art stream	14.5	85.5	72.6
Malay	The respondent is a Malay	14.5	85.5	38.2
Father1	The respondent's father with primary education level	14.0	86.0	23.1
Father2	The respondent's father with secondary education level	20.0	80.0	69.1
Father3*	The respondent's father with tertiary education level	67.7	32.4	7.8
Mother1	The respondent's mother with primary education level	11.4	88.6	18.2
Mother2	The respondent's mother with secondary education level	20.6	79.4	74.0
Mother3*	The respondent's mother with tertiary education level	64.7	35.3	7.8
Low Income	The respondent's family income below RM3000	15.4	84.6	38.9

Mid Income	The respondent's family income between RM3000-RM5999	18.3	81.7	46.5
High Income*	The respondent's family income RM6000 and above	54.0	46.0	14.5
Low Wage	The respondent's expected future wage difference between RM100-RM499	0	100	9.45
Mid Wage	The respondent's expected future wage difference between RM500-RM999	16.5	83.5	74.0
High Wage*	The respondent's expected future wage difference RM1000 and above	61.1	38.9	16.6
Low CGPA	The respondent's CGPA below 3	3.1	96.9	14.8
Mid CGPA	The respondent's CGPA between 3-3.49	17.7	82.3	68.9
High CGPA*	The respondent's CGPA with 3.5 and above	59.1	40.9	16.4

* denotes base (reference) variable

Table 2: Estimates and Odds ratio of the Logistic Model

Variables (1)	Coefficients estimates (β) (2)	Std. Error (3)	Odds ratio (e^{β}) (4)
Male	-1.050***	0.349	0.350
Art	-0.677*	0.364	0.508
Malay	-0.572*	0.323	0.565
Father1	0.196	0.681	1.217
Father2	0.136	0.553	1.145
Mother1	-0.574	0.724	0.563
Mother2	-0.115	0.555	0.892
Low income	-0.686	0.487	0.504
Mid income	-0.864*	0.453	0.421
Low wage	-21.017	5830.031	7.454×10^{-10}
Mid wage	-1.618***	0.428	0.198
Low CGPA	-3.374***	0.823	0.034
Mid CGPA	-1.929***	0.348	0.145
Constant	3.440	0.704	31.195

***denotes 1% significant level, **denotes 5% significant level, *denotes 10% significant level

In terms of personal background, male has a negative and significant relationship with the dependent variable. This implies that the odds of male undergraduates to further their studies are lower compared to female undergraduates. Its estimated coefficient shows that when an undergraduate is a male, the logarithm of odds will decrease by 1.050. Therefore the odds of pursuing postgraduate studies is 0.350 times lower for male undergraduates compared to female undergraduates. Besides that, the variable academic stream has a negative relationship with the dependent variable and this relationship is significant. This indicates that the odds to pursue postgraduate studies will decrease by 0.677 if a student is from the arts stream and the odds of pursuing postgraduate studies is 0.508 times lower for an arts stream student compared to a science stream student. The results from the regression analysis also show that the race of the respondents has a negative relationship with the dependent variable. This relationship is a significant relationship. In this relationship, it is implied that a Malay undergraduate will have lower likelihood of pursue further studies after graduation compared to other races. If an undergraduate is Malay, the logarithm of odds is reduced by 0.572 and the odds of pursuing further studies is 0.565 times lower compared to other races.

Among the parent's education level, it is found that both education level of respondent's father, i.e. primary and secondary education level (Father1 and Father2) have a positive relationship with the dependent variable however the relationship are not significant. On the other hand, both education levels of respondent's mother, i.e. primary and secondary education level (Mother1 and Mother2) have a negative relationship with the dependent variable; however the relationship is also not significant.

As for family income variable, both categories of family income, family income below RM3000 and income between RM3000 and RM5999 (low income and middle income, respectively) have a negative relationship with the dependent variable; however the relationship is significant only for variable middle income family. Therefore, if an undergraduate is in the category of middle family income, then the logarithm of odds will decrease by 0.864 while the odds of pursuing postgraduate studies is 0.421 times lower compared to the category of family income RM6000 and above.

Additionally, the results of the regression analysis also show that both variables of expected difference in future income, middle wage have a negative relationship with the dependent variable. If an undergraduate expects a low wage difference, then the logarithm of odds will decrease by 21.017 while the odds of pursuing postgraduate studies is negligibly lower compared to those who expect a high wage difference.

Lastly, both CGPA variables (low and middle CGPA) showed a negative relationship with the dependent variable and the relationship is significant for both variables. If an undergraduate is in the category of low CGPA, then the logarithm of odds will decrease by 3.374 while the odds of pursuing postgraduate studies is 0.034 times lower compared to the category of high CGPA. On the other hand, if an undergraduate is in the category of middle CGPA, then the logarithm of odds will decrease by 1.929 while the odds of pursuing postgraduate studies is 0.145 times lower compared to the category of high CGPA. Overall, the results corroborates with existing studies.

5. Conclusions

This paper set out to determine the factors that influence the decision to pursue postgraduate studies among final year undergraduates from Universiti Sains Malaysia (USM). The decision to pursue postgraduate studies or work requires careful cost and benefit calculation as well as time management as final undergraduates have to juggle between the demand of bachelor degree and postgraduate degree in the labor market. As such, the initial premise of the study is that family income is a significant factor that will affect the decision of undergraduate to pursue postgraduate studies or work. In this case, the government and universities play an important role to provide sufficient financial aid for students who wish to pursue postgraduate studies. The sponsorship programme My Brain 15 should not be stopped by the end of 2015 but must be made available in the long run. Additionally, the government should also implement a new policy which is giving financial aid specifically to those who are lower income families such as scholarship, low interest loan, book voucher or providing opportunities for part time work for students who wish to pursue their master's programme on a part time basis. Moreover, universities should increase the availability of fellowship and positions for graduate assistant and provide the fellowship or graduate assistants schemes at a reasonable allowance.

Moreover, if the difference of earnings in future is optimistic between bachelor degree and postgraduate degree, the individual is more likely to pursue postgraduate studies compared to low difference in earnings in the future. This is considered as justified given the direct and indirect costs they bear during their postgraduate studies. In this case, the government can take steps to ensure that the salary scheme of individuals with postgraduate qualification commensurate with their level of education. The government should also reserve the vacancies for higher rank jobs only for postgraduates in order to attract more students to pursue their postgraduate studies. On the other hand, the private sector should also pay a higher premium for postgraduates because postgraduates are able to provide employers with better technical skills and innovation with their higher level of knowledge.

Furthermore, the result shows that females are more likely to pursue postgraduate studies compared to males. This finding possibly reflects the fact that men are the main breadwinners and therefore male students are more inclined to start working after they obtain their bachelor's degree to get a head start in their career. In this situation, the Ministry of Higher Education is urged to play a very important role to carry surveys such as Tracer Study in a more extended form to identify the reasons boys prefer to work and are less inclined to pursue postgraduate studies. The findings of the study will greatly help in promoting more males to pursue postgraduate studies by implementing relevant policies based on the response of male students.

Finally it is noted that this study asked respondents to give their feedback on factors they considered important in the selection of a university for pursuing post graduate studies. The findings showed that students will definitely choose a university with higher ranking to pursue their postgraduate studies. In this case, local universities such as USM can try to improve their own ranking and reputation by improving the quality of education, improve the quality of faculty, increase the number of research output, increase the publication count etc. in order to attract more students to pursue postgraduate studies at the particular university.

Lastly, the respondents of this research also stated that affordable fees and a conducive environment are the factors that influence them to choose a particular university to pursue postgraduate studies. In this case, local universities should ensure that the fees for postgraduate programmes are not exorbitant. In addition, universities also have to provide a conducive environment for studies such as better facilities, a clean and tidy environment etc.

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